

CLAIMS

1) Self-cleaning system for dry recovery of processing mists in automatic machines for spraying UV-dried acrylic paints or other products which give rise to similar requirements, of the type in which the chamber (1) in which the spray guns (P1, P2) operate is connected in its upper part to the atmosphere through a circuit for the admission of clean ambient air and in which, inside the said chamber (1), at the sides of the self-cleaning conveyor (4) for advancing the articles (P) to be painted, there are suction intakes (6, 6') connected to an external fan (16) of suitable capacity, with the interposition of suitable dry filter means, characterized in that the said suction intakes are inclined transversely downwards towards the said conveyor (4) and are designed in such a way that filter grids (7, 7') with corrugated profiles can be positioned transversely on them, the grids being adjacent to each other, in such a way as to cover the whole extension of the said intakes, the longitudinal axes of the corrugations being orientated orthogonally to the longitudinal axis of the conveyor (4) on which the lower ends of the grids are positioned, in such a way that the paint retained by the said grids, which are provided with suitably staggered holes (707, 707') for the passage of air, drips onto the said conveyor which carries it away towards the cleaning and recovery means (5) associated with the conveyor.

2) System according to Claim 1, in which the said filter grids (7, 7') are made from stainless steel or other suitable material.

3) System according to Claim 1, in which each filter grid (7, 7') is provided on its underside with a cross-piece or other projecting means (407), which bears on the outside of the higher longitudinal side of the suction intake (6, 6').

4) System according to Claim 1, in which each filter grid (7, 7') is provided with at least one handle (507) on its upper side, in such a way that it can be easily handled by the operators at various times, including times when the spraying machine is not operating and the said grids are withdrawn and placed with their lower ends inside the suction intakes (6, 6'), the chamber (1) of the said machine being provided for this purpose with lateral hatches (201, 201') through which the said grids (7, 7') can be accessed.

5) System according to Claim 1, in which each filter grid (7, 7') comprises a lower corrugated sheet (107) fixed at its ends to flat cross-pieces (207, 207') whose heights are greater than that of the corrugated profile of the said sheet (107), in such a way that they project by a suitable distance above and below this sheet, so that a second corrugated sheet (307) can be retained by bearing on the cross-pieces and is therefore removable when necessary, the corrugations of the second sheet having a larger angle than the corrugations of the lower sheet, in such a way that they are suitably spaced apart from them, the said lower cross-piece (207') being provided with discharge holes (607) adjoining the lower vertices of the two corrugated sheets, the upper sheet (307) being provided with equidistant holes (707) in the lower vertices of its corrugations, while the lower sheet (107) is provided with identical and equidistant holes (707') in the upper parts of the flat faces of its corrugations, these holes being staggered with respect to the upper holes, in such a way that the flow of air sucked in by the intakes (6, 6') is forced to follow a labyrinthine path in passing through the perforated sheets of the filter grids (7, 7'), to contact the whole surface of these sheets and to deposit the paint droplets on them, both as a result of the surface contact and as a result of precipitation, the paint collected by the two sheets of the grids being made to flow by gravity along the corrugations of these sheets and fall onto the conveyor (4) through the holes (607) of the lower end cross-piece (207') which also acts as a drip strip.

6) System according to Claim 5, in which the two corrugated sheets (107, 307) making up each filter grid (7, 7') have identical corrugation pitches.

7) System according to Claim 5, in which the lower corrugated sheet (107) of each filter grid (7, 7') has corrugations with an angle of less than 90°, for example approximately 40°, while the upper corrugated sheet (107') of the said grids has corrugations with an angle of approximately 90°.

8) System according to claim 5, in which at least the lower sheet (107) of the filter grid (7, 7') can be free of holes in the portion which projects from the suction intakes and which is located on the conveyor (4) of the spraying machine.

9) System according to claim 5, in which the lower sheet (107) of each filter grid (7, 7') can be provided in its lower part with a cross-piece which reproduces its corrugated profile and which projects downwards into the suction intake, before the lowest edge which bears on the said intake, this cross-piece acting as a drip strip.

5 10) System according to claim 1, in which at least the upper parts of the suction intakes (6, 6') contain removable and preferably inclined filters of the self-cleaning or other type (9, 9'), consisting for example of panels made with fibres of synthetic material or metal chips or other suitable material, through which the flow of air passes, and which also contribute to the capture of the paint droplets contained in
10 the mists sucked from the spraying chamber (1).

11) System according to claim 1, in which the lower ends of the suction intakes (6, 6') are connected together by a boxlike collector (10) having a predominantly horizontal extension, positioned transversely and under the conveyor (4) of the spraying machine, the lower wall (110) of the collector being such that it
15 converges towards a central lower area in which is located a tank (11), into which all the paint falling from the suction intakes and from the filters located therein tends to flow by gravity, and which can be designed to be removable for periodic emptying or which can be provided with suction means for automatic extraction of the collected product, the intermediate part of the said collector (10) being made with a lateral
20 aperture (12) connected to a duct (13), also boxlike and having a predominantly horizontal extension, which in plan view appears L-shaped so that its end opposite that connected to the said aperture (12) is positioned at the side of the external conveyor (T1) of the spraying machine, for connection to the lower end of an ascending duct (14), also of appropriate length, which preferably terminates at its top
25 in at least one bend (15) connected to the suction intake of a fan (16) which discharges into the atmosphere, the lower wall of the said duct (13) being made inclined with a progressive descent towards the said tank (11), in such a way that all the paint flowing from this duct and from the downstream duct (14, 15) flows into the said collecting tank (11).

12) System according to Claim 11, in which the said fan (16) is of the centrifugal type and is designed in any suitable way to recover the residual paint droplets contained in the air by precipitation on the blades of the fan and by centrifugal force, the casing of this component being covered or internally structured with a porous surface if necessary, to enhance the precipitation and retention of the paint, and being provided in its lower part with a trap in which the recovered paint is collected and which opens into a drainage duct (17) which discharges by gravity into any lower part of the system, near the said collecting tank (11).

13) System according to claim 1, in which, if required by the nature of the product to be recovered, self-cleaning filters can be positioned in a cassette arrangement in the accessible horizontal part (13) of the said system, in such a way that the filters can be withdrawn when necessary for periodic cleaning.

14) System according to claim 1, in which the inner surfaces of the system which are located at a point of deflection of the flow of air sucked in and which tend to be in contact with the said flow to a greater extent than other surfaces, can be provided for example with finned porous inserts or other known means for precipitating the paint particles carried by the air.